

Give the **inverse** of each relation. Tell whether the inverse is a function and how you know.

1.) $\{(3, 5) (6, 10) (9, 15)\}$

$\{(5, 3) (10, 6) (15, 9)\}$

function - no inputs repeat

2.) $\{(1, 2) (3, 4) (-3, 4) (-1, 2)\}$

$\{(2, 1) (4, 3) (4, -3) (2, -1)\}$

not a function - 2 and 4 have more than 1 output

4.) $\{(0, 2) (2, 3) (3, 4) (1, 1)\}$

$\{(2, 0) (3, 2) (4, 3) (1, 1)\}$

function - no inputs repeat

3.) $\{(1, 2) (2, 3) (3, 2) (4, 1)\}$

$\{(2, 1) (3, 2) (2, 3) (1, 4)\}$

not a function - 2 has more than 1 output

For each function, find an **equation** for the **inverse**.

5.) $f(x) = 5x + 1$

$x = 5y + 1$

$\frac{x-1}{5} = \frac{5y}{5}$

$\frac{x-1}{5} = y$

$g(x) = \frac{x-1}{5}$

6.) $h(x) = \frac{1}{4}(x-1)$

$x = \frac{1}{4}(y-1)$

$4x = y-1$

$4x+1 = y$

$g(x) = 4x+1$

7.) The inverse of $h(x) = \frac{1}{2}x+3$ is $g(x) = 2(x-3)$

Find $h \circ g(x) = \boxed{x}$

$\frac{1}{2}[2(x-3)]+3$

$\frac{1}{2}(2x-6)+3$

$x-3+3$

x

8.) New carpeting can be purchased and installed for \$17.50 per square yard plus a \$50 delivery fee.

a.) Write an equation for the cost, c , of carpeting s square yards of a house.

$c(s) = 17.50(s) + 50$

b.) Find the inverse of the cost function. In other words, solve for s .

$s = \frac{c-50}{17.50}$

c.) How many square yards can you carpet for \$1485?

$s = \frac{1485-50}{17.50}$

$s = \frac{1435}{17.50} = \boxed{82 \text{ yd}^2}$

★ This should ALWAYS happen when you compose a function and its inverse.